Data Server Subsystem Status

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- **Statement of the problem**
- **Components of the subsystem**
- **Status of the components**
- **Recovery Plan**

Introduction

Two of the four components that make up the Data Server Subsystem (DSS) are behind schedule, and are not sufficiently mature for CDR.

Since DSS is the "heart of the system," it is important to understand the impact and recovery plan in detail.

The situation arises from a short-term resource constraint, not a technical problem.

DSS CSCIs

- **SDSRV**
  - Performs data-collection-specific searches
  - Manages queues for searches, orders, inserts
  - Includes *Earth Science Data Type* (ESDT) code (products and services)
- **STMGT**
  - Manages <u>all</u> physical storage resource pools for <u>all</u> DSS components
    - Tape robotic archive   Online storage
    - RAID disk cache   Peripheral devices
- **DDIST**
  - Stages ordered data; services ftp "gets" and "puts"
  - Notifies users when ordered data is ready/shipped (on media or electronically)
- **DDSRV**
  - Manages archiving, search, and retrieval of documents

DSS & Component Status at CDR-B
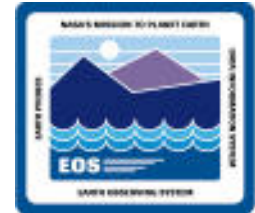
- **Two CSCIs in DSS, STMGT and DDIST, are fully designed.**
- **Two SDSRV and DDSRV, have not completed detailed design.**

However, all of the DSS *public interfaces* have completed design and are stable. This includes interfaces used among DSS CIs, as well as those used by other subsystem CIs to access DSS services. All public interfaces are going under configuration control at CDR-B, just as they did for Release A at CDR-A. This includes the public interfaces for SDSRV and DDSRV. (See DID 313-CD-006-002.)

Public Interfaces & Encapsulation

- **Many fundamental SDSRV client methods are inherited from Release A, for example:**

Insert	**Search**
Acquire	**Browse**

- **ESDTs are encapsulated within these methods, whether for simple services (like "fetch") or complex services (like "fetch a subset") are invoked**

- **Pseudocode schematic:**

  Call SDSRV {Server,

  > *DataType,*
  >
  > *DataService,*
  >
  > *InterfaceParms(attribute=value, attribute=value, ...)*
  >
  > *}*

- **Clients (in general) obtain the interface parameters for the data type/ service of interest from Advertising "on the fly"**

Public Interfaces & Encapsulation (cont.)

[still pseudocode schematics]

"Simple" ESDT service (from Release A):

Call SDSRV{LaRCxx, CER02, Acquire, InterfaceParm(MediaType = 8mmTape)}

"Complex" ESDT service (new for Release B):

Call SDSRV(GSFCxx, MOD02, TemporalSubset, InterfaceParm(StartTime=10:00:00.0, StopTime=10:05:00.0)}

The only difference is in the specific list of attribute/ value pairs, which are parsed and used by the specific ESDTs, and are not part of the general public interface spec for SDSRV.

ECS System Implications

Because of the object-oriented design approach, and the encapsulation of all CIs behind public interface classes, the impact is confined to the detailed design of the specific services provided by the SDSRV and DDSRV CIs.

The mechanisms by which all other CIs use these services are well-defined in the completed public interface design.

Thus, there are no ECS system-level impacts due to this problem at the present time, thanks to encapsulation.

SDSRV and DDSRV Design Status

- **SDSRV for Release B**
  - **Retrofit key mechanisms**
  - **Development of approximately 115 ESDTs (beyond the 58 developed for Release A)**
  - **Conversion to Illustra**
  - **Introduction of ESQL**
    - **ESQL is supported by a new public interface in Release B**
  - **SDSRV *inherits* from Release A**
    - **Queue management**
    - **ESDT infrastructure**
    - **Most of public interface**
- **DDSRV for Release B**
  - **Retrofit key mechanisms**
  - **Evaluating opportunity to converge SDSRV & DDSRV based on common COTS DBMS**
  - **Add three document types**

Recovery Plan

Proceeded with CDR-B as planned.

- **Practical since the two CIs are encapsulated by public interfaces whose design is complete**
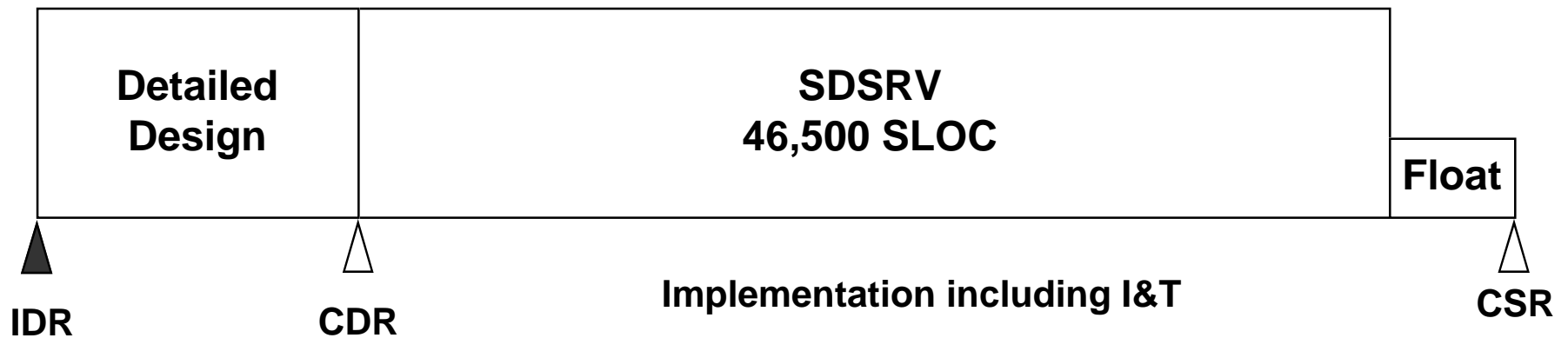
Bolstered SDSRV and DDSRV design team resources to complete detailed design

- **Convene a Delta Detailed Design Review (DDDR) on June 6**

 - **Release additional design documentation, not available at CDR-B, two weeks prior to the DDDR (May 23)**

Recovering lost schedule contingency during implementation

- **Exploit potential for parallel implementation of SDSRV sub-components to recover the implementation schedule float lost due to the delay in completion of detailed design**

Recovery Plan:
Implementation Schedule Float -- Release B
Critical Path at IDR

Detailed Design

SDSRV 46,500 SLOC

Float

IDR

CDR

Implementation including I&T

CSR

Recovery Plan:
Implementation Schedule Float -- Release B
Insertion of DDDR

Complete
Detailed
Design

DDDR

Detailed
Design

SDSRV
46,500 SLOC

Float

IDR

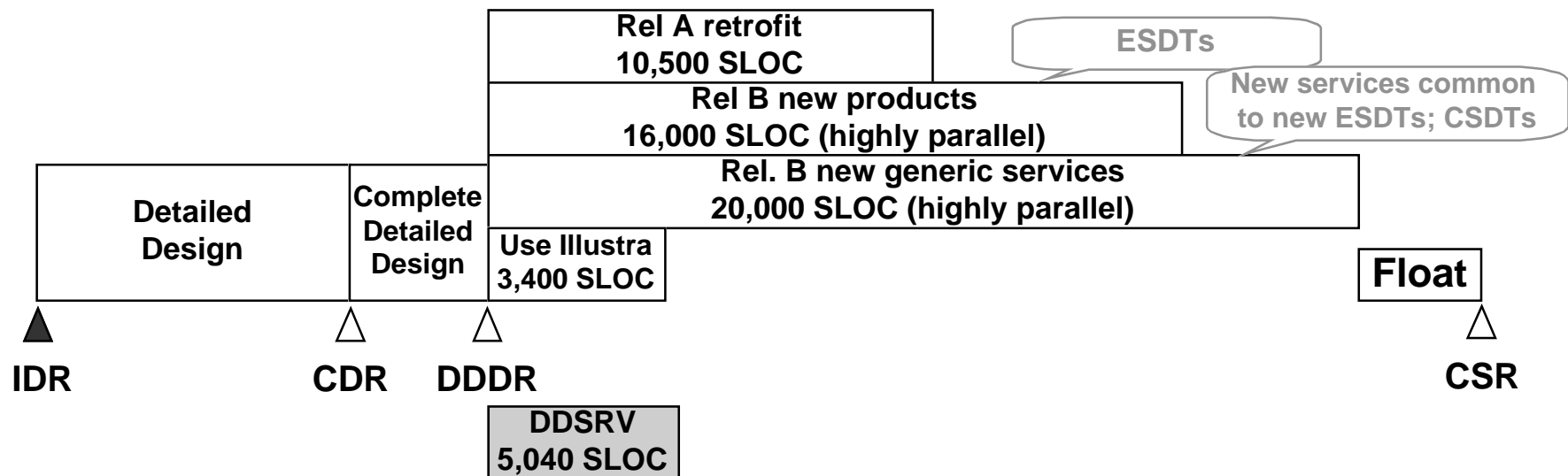CDR

Implementation including I&T

CSR
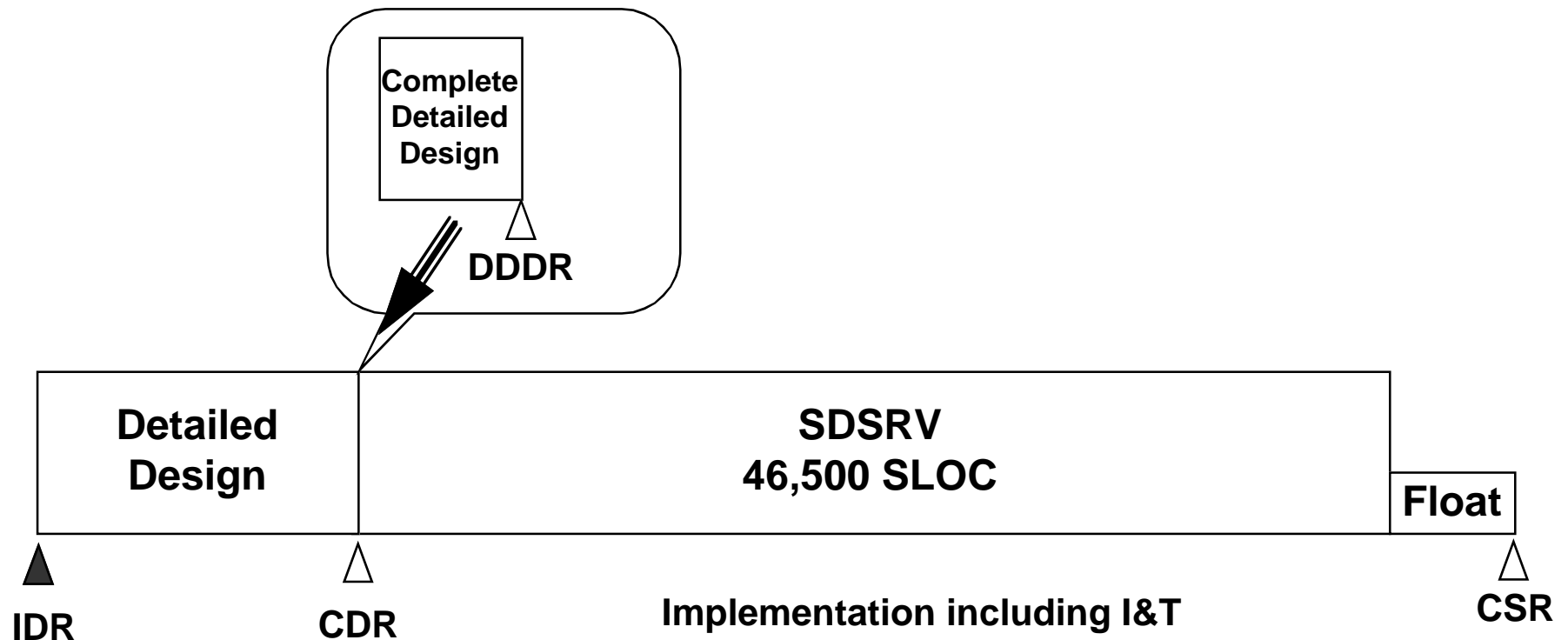
Recovery Plan:
Implementation Schedule Float -- Release B Critical Path at CDR

For illustration purposes only -- See Road to AM-1 presentation for CDR baseline plan

SDSRV Implementation including I&T
49,900 SLOC

| | | | Rel A retrofit 10,500 SLOC | | ESDTs |
| Detailed Design | Complete Detailed Design | Use Illustra 3,400 SLOC | Rel B new products 16,000 SLOC (highly parallel) | Rel. B new generic services 20,000 SLOC (highly parallel) | New services common to new ESDTs; CSDTs |

Float

▲ IDR   △ CDR   △ DDDR

DDSRV 5,040 SLOC

△ CSR

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To summarize DSS status at Release B CDR:

There is a localized problem affecting two of four CSCIs, with closure in work and float recovery resolved.